



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,758	04/14/2004	Jin-Shou Fang	OP-093000142	5063

7590

04/18/2006

Yi-Wen Tseng
4331 Stevens Battle Lane
Fairfax, VA 22033

EXAMINER

GUHARAY, KARABI

ART UNIT	PAPER NUMBER
----------	--------------

2879

DATE MAILED: 04/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/823,758

Applicant(s)

FANG, JIN-SHOU

Examiner

Karabi Guharay

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

Claim Objections

Claim 16 is objected to because of the following informalities: In claim 16, line 5, the first occurrence of "silver paste" should be omitted. Appropriate correction is required.

Further for the clarity of the claim 8, claim 8 should recite on line 2 as "substrate, and the cathode comprises a first conductive layer and a second conductive layer formed on the substrate".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6-8, 11-12 & 15 is rejected under 35 U.S.C. 102(b) as being anticipated by Danroc et al. (US 5828162).

Regarding claims 1 & 15, Danroc discloses a field emission display (Fig 2-5), comprising an anode electrode layer (16) having at least one anode (22) thereon; a cathode electrode layer (4) having at least one cathode (12) formed thereon wherein the cathode is aligned with anode and a gate conductive layer (8) disposed between the anode electrode layer and the cathode electrode layer, the gate conductive layer having at least one aperture (10) aligned with cathode and anode, wherein the cathode is so configured that beeline between all surface points and the conductive layer are identical

Art Unit: 2879

or having a protruding center gradually descending towards a periphery of the cathode electrode (see Fig 3-5, line 66 of column 3-26 of column 4).

Regarding claim 2, Danroc discloses that the anode electrode layer comprises a Substrate (20), and the anode comprises a first conductive layer (22) and a second conductive layer (24) formed on the substrate sequentially (lines 27-32 of column 4).

Regarding claim 3, Danroc discloses that the substrate is fabricated from glass material (lines 12-14 of column 3).

Regarding claims 6 & 7, Danroc discloses a dielectric layer (6) formed and patterned on the cathode electrode layer (4) to encompass the cathode (12) therein, and gate electrode (8) is formed on the dielectric (lines 3-5 of column 4).

Regarding claim 8, Danroc discloses that the cathode electrode layer (14) comprises a substrate (2), a first conductive layer (4) and a second conductive layer (12) formed on the substrate (see Fig 3-5).

Regarding claim 11, Danroc discloses a cathode electrode (14) of a field emission display comprising a substrate (2) and a cathode electrode (4, 12) formed on the substrate where the cathode electrode (12) has a center gradually descending towards peripheries thereof (Fig 2-5).

Regarding claim 12, Danroc discloses that the cathode electrode comprises a first conductive layer (4) and a second conductive layer (12).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2879

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-5, & 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Danroc et al. (US 5,828,162).

Regarding claims 4-5 & 17, Danroc discloses that the first conductive material is a transparent conductive material, forming anode, and the second conductive material is phosphor powder (lines 31-32 of column 4).

But Danroc is silent about the material used. However, ITO is a well-known suitable material for forming transparent electrode for the display device.

Thus it would have been obvious to one having ordinary skill in the art at the time the invention was made to use ITO for the anode in the device of Danroc et al., since selection of known material for known purposes is within the skill of art.

Claims 9,13 & 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Danroc et al. as applied to claim 1 above, and further in view of Lee et al. (US 6750604).

Regarding claims 9, 13 & 16, Danroc discloses a first conductive layer of the cathode electrode but is silent about the particular material used to form the first conductive material.

However, in the same field of FED, lee et al. disclose a field emission display cathode having a first conductive layer (80 of Fig 4A-5B) formed of silver paste, and thus teaches the suitability of silver paste for cathode electrode layer in a filed emission device.

Art Unit: 2879

Thus it would have been obvious to one having ordinary skill in the art at the time the invention was made to apply silver paste to form the first conductive layer of the cathode electrode since selection of known material for known purposes is within the skill of art.

Claims 10 & 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Danroc et al. as applied to claim 1 above, and further in view of Nakashima et al. (US 6940220).

Regarding claims 10 & 14, Danroc discloses that the second conductive layer (micro heap 12) is fabricated from carbon diamond or diamond like carbon nanometric powders (lines 26-28 of column 3), instead of claimed carbon nanotubes.

However, Nakashima et al., in the same field of FED discloses that for the purpose of electron emission materials, diamond like carbon or carbon nanotubes are equivalent materials widely used as emitters (lines 65 of column 5- line 1 of column 6).

Thus it would have been obvious to one having ordinary skill in the art at the time the invention was made to use carbon nanotube instead of diamond like carbon, in the device of Danroc et al., since selection of any one of the known equivalent materials would be within the level of ordinary skill in the art.

Other Prior Art Cited

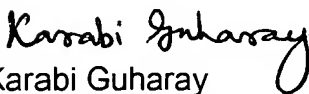
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure : Chuang et al. (US 6448709) ; Tuck et al. (US 6741025).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karabi Guharay whose telephone number is (571) 272-2452. The examiner can normally be reached on Monday-Friday 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization is (571) 273-8300

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Karabi Guharay
Primary Examiner
Art Unit 2879